

### Internally Matched Power GaAs FETs (X, Ku-Band)

#### Features

- High power
  - $P_{1dB} = 36.5$  dBm at 14.0 GHz to 14.5 GHz
- High gain
  - $G_{1dB} = 6.0$  dB at 14.0 GHz to 14.5 GHz
- Broadband internally matched
- Hermetically sealed package

#### RF Performance Specifications ( $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max
Output Power at 1dB Compression Point	$P_{1dB}$	$V_{DS} = 9V$ $f = 14.0 - 14.5$ GHz	dBm	35.5	36.5	–
Power Gain at 1dB Compression Point	$G_{1dB}$		dB	5.0	6.0	–
Drain Current	$I_{DS}$		A	–	1.7	2.2
Power Added Efficiency	$\eta_{add}$		%	–	22	–
Channel-Temperature Rise	$\Delta T_{ch}$	$V_{DS} \times I_{DS} \times R_{th(c-c)}$	$^\circ\text{C}$	–	–	70

#### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Condition	Unit	Min.	Typ.	Max.
Transconductance	gm	$V_{DS} = 3V$ $I_{DS} = 2.0A$	mS	–	600	–
Pinch-off Voltage	$V_{GSoff}$	$V_{DS} = 3V$ $I_{DS} = 60$ mA	V	-2	-3.5	-5
Saturated Drain Current	$I_{DSS}$	$V_{DS} = 3V$ $V_{GS} = 0V$	A	–	4.0	5.2
Gate-Source Breakdown Voltage	$V_{GSO}$	$I_{GS} = -60$ $\mu\text{A}$	V	-5	–	–
Thermal Resistance	$R_{th(c-c)}$	Channel to Case	$^\circ\text{C/W}$	–	2.9	3.5

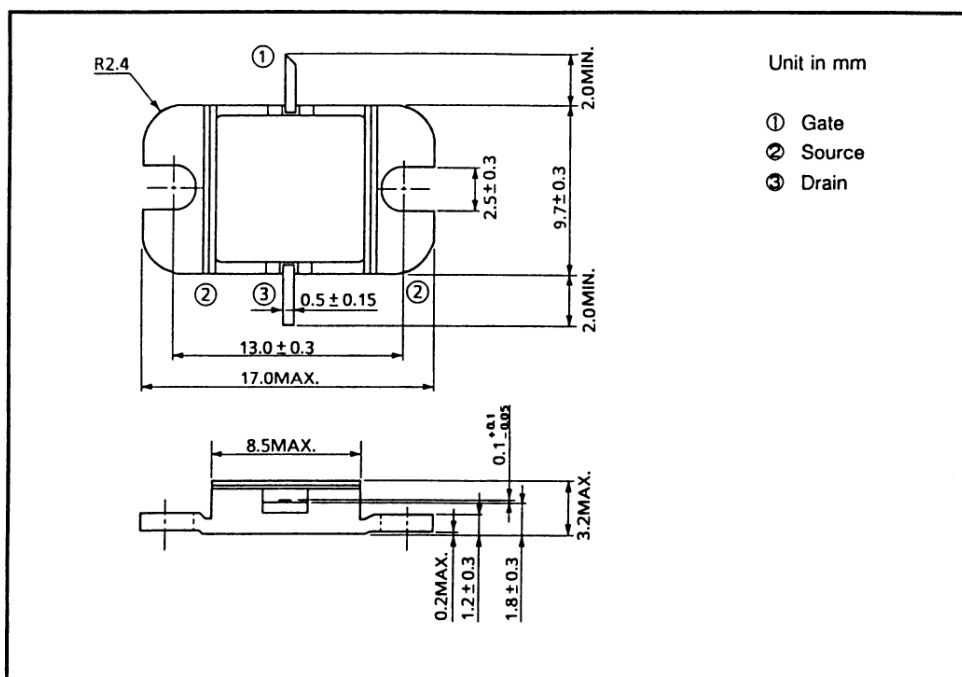
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Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristic	Symbol	Unit	Rating
Drain-Source Voltage	$V_{DS}$	V	15
Gate-Source Voltage	$V_{GS}$	V	-5
Drain Current	$I_D$	A	5.2
Total Power Dissipation ( $T_c = 25^\circ\text{C}$ )	$P_T$	W	30
Channel Temperature	$T_{ch}$	$^\circ\text{C}$	175
Storage Temperature	$T_{stg}$	$^\circ\text{C}$	-65 ~ 175

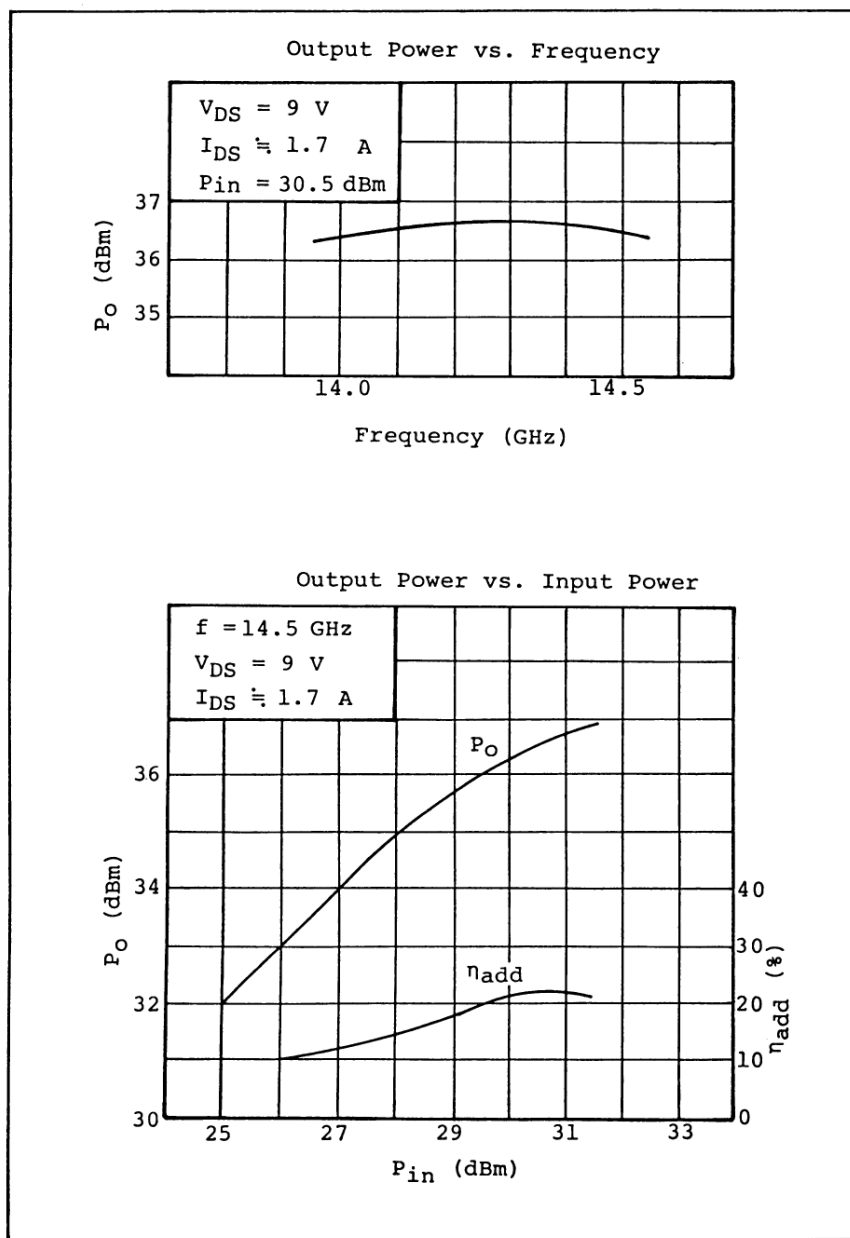
## Package Outline (2-9D1B)



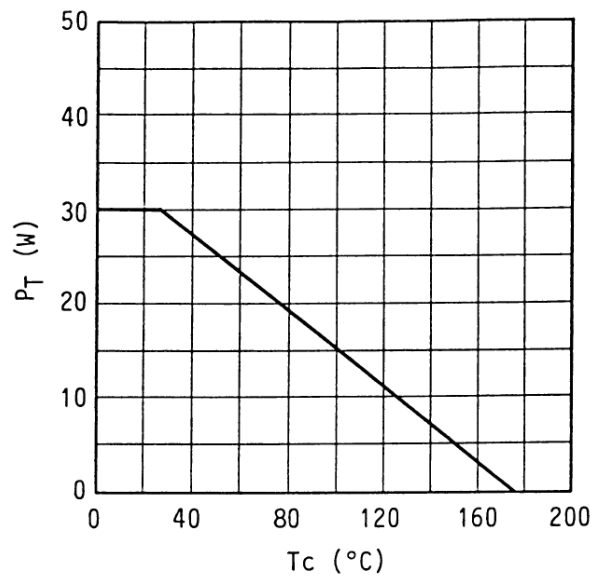
## Handling Precautions for Packaged Type

Soldering iron should be grounded and the operating time should not exceed 10 seconds at  $260^\circ\text{C}$ .

## RF Performances



Power Dissipation vs. Case Temperature



## TIM1414-4 S-Parameters (Magn. and Angles)

 $V_{DS} = 9 \text{ V}, I_{DS} = 2.0 \text{ A}$  $f = 13.0 - 16.2 \text{ GHz}$ 